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# Maintaining Basic Command Unit and Crime and Disorder Partnership families for comparative purposes: 1 April 2003 results

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***The views expressed in this note are those of the authors, not necessarily those of the Home Office (nor do they reflect Government policy).***

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## Background

In January 2000, the Home Office first published local-level crime statistics for the 318 Basic Command Units (BCUs) covering England and Wales. In July 2000, work was carried out to list the 376 Crime and Disorder Reduction Partnership (CDRP) areas in England and Wales in groupings, or families (Leigh *et al.*, 2000). These families were based on socio-economic and demographic factors that were shown to correlate geographically with the level of crime and disorder within a locality. These families were intended to be used:

- to provide a basis for the national publication of crime statistics at a local level;
- to help CDRPs identify which partnerships in their family have the lowest crime rates and, over time, are most successful at reducing crime, so that they can learn lessons from them;
- to help forces and police authorities undertake best value reviews by enabling them to compare local-level performance across a range of functions or processes; and
- to assist HMIC inspections at BCU level.

In July 2000, the Home Office published crime statistics organised by CDRP family (Povey *et al.*, 2000). A need for a similar grouping was identified for BCUs, so that publications of crime statistics at this level could also be organised by family. However, BCU boundaries are chosen according to operational policing needs, and do not necessarily coincide with the CDRP boundaries. Thus, in July 2001, Home Office Briefing Note 4/01, *Family Ties: Developing Basic Command Unit Families For Comparative Purposes* (Harper *et al.*, 2001) was published, listing the families of the 318 Basic Command Units. A more detailed report is available on the Home Office RDS website [www.homeoffice.gov.uk/rds](http://www.homeoffice.gov.uk/rds) (Harper *et al.*, 2002). A subsequent maintenance of family membership is documented at the Home Office RDS website <http://www.homeoffice.gov.uk/rds/pdfs2/basiccommand.pdf> (Sheldon *et al.*, 2002).

Whilst CDRP boundaries remain unchanged, the BCU boundaries have been changed a number of times since the initial publication of BCU-level crime data organised by family. Some BCU areas were entirely reorganised, usually resulting in a reduction in the number of BCUs, with several smaller areas being rearranged into a smaller number of larger BCUs.

Such changes have occurred a number of times – the most recent taking effect from 1 April 2003, those prior to that taking place on 1 April 2002.

The overall objective of this work, then, is to update boundaries, socio-economic data and family membership of the BCUs in the light of changed boundaries.

## How the families were maintained

The original families (Briefing Notes 3/00 and 4/01) were created using *Cluster Analysis* (Hartigan and Wong, 1979 and Kohonen, 1989) – a statistical method which groups entities into a number of different families on the basis of a number of variables. Individual entities (here BCUs) are assigned to a family into which they best ‘fit’ in terms of these variables. The assignment process may require several iterations, since when a family gains a new member, the overall characteristics of that family change slightly. The aim of the analysis is to find a stable set of families, with distinct characteristics, allowing meaningful comparisons to take place between family members.

### (i) Variables used

The variables used in the updating process (Box 1) were the same as those used in the original BCU and CDRP analyses. Variable definitions are contained in Harper *et al.*, (2002), *Family Origins: Developing groups of Crime and Disorder Reduction Partnerships and Police Basic Command Units for comparative purposes*.

### **Box 1: Variables used for the cluster analyses**

1. Percentage of young males (16-24)
2. Percentage of minority ethnic population
3. Percentage of single adult households
4. Percentage of single parent households
5. Percentage of student households
6. Percentage of residents living at a different address one year before the 1991 Census
7. Percentage of local authority housing, plus new town renters and housing associations
8. Percentage of terraced housing
9. Percentage of overcrowding
10. Population sparsity
11. Population density
12. Length of A, B and minor roads per head of population
13. Percentage of daytime population (leisure and retail employment)
14. Percentage of young male claimants (of unemployment-related benefits)
15. Percentage of long-term claimants (of unemployment-related benefits)
16. Index of homogeneity
17. Motorway junctions per 1000 population
18. Population per square kilometre

#### **(ii) Maintaining the variables**

The values of the variables used remained the same as those used originally (Briefing Notes 3/00 and 4/01), unless the police reported changes to BCUs. Where boundaries changed, existing variables were re-aggregated to the new spatial units.

#### **(iii) Running the cluster analysis**

For the updating procedure, cluster analysis was applied to BCUs. However, there were two main constraints:

- the family membership of the BCU remained unchanged (compared with its membership as of 1 April 2002), if there were no changes to its boundaries; and
- the family membership of a BCU was fixed to its corresponding coterminous CDRP – only applicable if there exists a coterminous CDRP.

Allowing for reorganisations, there are currently 269 BCUs in England and Wales (compared with 318 in Briefing Note 4/01, and 275 as of 1 April 2002). There were 15 newly created BCUs, over five police forces. Of these, only Telford and the Wrekin was coterminous with an existing CDRP, and so the 14 others were free to be assigned to new families.

## **Results**

### **Family membership**

The following table shows the average, minimum and maximum family sizes for the current BCUs and CDRPs (excluding airports). For BCUs, the corresponding statistics for 1 April 2002 are shown in brackets for comparison purposes.

	Families	
	BCU	CDRP
Average family size	21 (21)	29
Smallest family	5 (6)	3
Largest family	34 (34)	62

The family membership for each of the 14 BCU families (including the three airports) is shown below. A newly created BCU (of which there are 14) is indicated with a bold **N** following the name. In some cases, the name of the BCU is unchanged, although its boundaries have been altered.

### Complete listing of family membership

<b>BCU Family 1 (5)</b> <b>City</b> Bishopsgate Snowhill <b>Metropolitan</b> Camden Westminster <b>Northumbria</b> Newcastle Central	<b>BCU Family 4 (27)</b> <b>Cleveland</b> Middlesbrough <b>GMP</b> North Manchester South Manchester <b>Humberside</b> Kingston upon Hull <b>Merseyside</b> Liverpool North Liverpool South <b>Northumbria</b> Gateshead East Newcastle East Newcastle West Sunderland City Sunderland West Wallsend <b>Nottinghamshire</b> Nottingham <b>South Yorkshire</b> Sheffield Central <b>West Midlands</b> D3 E1 E2 F2 G1 G2 H2 K1 K2 M3 <b>West Yorkshire</b> Bradford North Bradford South Keighley	<b>Leicestershire</b> Leicestershire (West Area) <b>Merseyside</b> Sefton <b>North Wales</b> North Wales – Eastern <b>N</b> <b>Northamptonshire</b> Northamptonshire – Eastern Northern <b>Nottinghamshire</b> Mansfield/Sutton in Ashfield South Notts <b>South Wales</b> Bridgend Vale of Glamorgan <b>West Mercia</b> North Worcestershire <b>N</b> Telford and the Wrekin <b>N</b> <b>West Yorkshire</b> Wakefield <b>Wiltshire</b> Swindon	<b>West Yorkshire</b> Killingbeck <b>N</b>  <b>BCU Family 7 (17)</b> <b>Cheshire</b> Crewe <b>Cumbria</b> Barrow and Kendal Workington and Whitehaven <b>Essex</b> Tendring <b>Gwent</b> Pontypool <b>Hampshire</b> Isle of Wight <b>Humberside</b> East Riding of Yorkshire North Lincolnshire <b>Leicestershire</b> Leicestershire (East Area) <b>Lincolnshire</b> West Lincolnshire <b>Norfolk</b> Norfolk Central / Southern Area <b>North Wales</b> North Wales – Central <b>N</b> <b>Nottinghamshire</b> Bassetlaw/Newark & Sherwood <b>Suffolk</b> Suffolk Eastern <b>Sussex</b> Senlac <b>Warwickshire</b> Warwickshire Southern <b>West Mercia</b> South Worcestershire <b>N</b>
<b>BCU Family 2 (15)</b> <b>Metropolitan</b> Brent Ealing Greenwich Hackney Haringey Islington Lambeth Lewisham Newham Southwark Tower Hamlets <b>West Midlands</b> D1 E3 F1 F3	<b>BCU Family 5 (28)</b> <b>Cambridgeshire</b> Northern <b>Cheshire</b> Warrington <b>Derbyshire</b> Alfreton (A Division) Chesterfield (C Division) Derby (D Division) <b>Durham</b> Darlington Durham <b>Essex</b> Thurrock <b>GMP</b> Bury Stockport Trafford Wigan <b>Hampshire</b> Havant <b>Kent</b> Swale <b>Lancashire</b> Lancashire Southern	<b>BCU Family 6 (22)</b> <b>Cleveland</b> Hartlepool Langbaugh Stockton <b>Durham</b> Derwentside Easington Sedgefield Wear-Tees <b>Essex</b> Basildon <b>Gwent</b> Caerphilly & Blaenau Gwent <b>N</b> <b>Merseyside</b> St Helens Wirral <b>Metropolitan</b> Barking and Dagenham <b>Northumbria</b> South Tyneside South-East Northumberland Washington <b>South Wales</b> Merthyr Tydfil Neath & Port Talbot Rhondda Cynon Taff <b>South Yorkshire</b> Barnsley Doncaster Rotherham	<b>BCU Family 8 (34)</b> <b>Avon and Somerset</b> Bath and North-East Somerset North Somerset <b>Cheshire</b> Congleton and Vale Royal Macclesfield <b>Dorset</b> Bournemouth Poole <b>Essex</b> Chelmsford Colchester Rayleigh Southend
<b>BCU Family 3 (18)</b> <b>Avon and Somerset</b> Central Bristol <b>Bedfordshire</b> Luton <b>Leicestershire</b> Leicestershire Central <b>Metropolitan</b> Barnet Croydon Enfield Hammersmith and Fulham Harrow Hillingdon Hounslow Kensington and Chelsea Kingston-upon-Thames Merton Redbridge Richmond-upon-Thames Waltham Forest Wandsworth <b>Thames Valley</b> Slough and District			

**Gloucestershire**  
Cheltenham and  
Tewkesbury  
Forest and  
Gloucester

**Hampshire**  
Fareham  
New Forest  
North East  
Hampshire

**Hertfordshire**  
Hertfordshire –  
Western

**Kent**  
Canterbury  
West Kent

**Lancashire**  
Lancashire Northern  
Lancashire Western

**Metropolitan**  
Bexley  
Bromley and  
Orpington  
Havering  
Sutton

**Staffordshire**  
Chase  
North Staffordshire

**Surrey**  
East Surrey  
West Surrey

**Sussex**  
East Downs **N**  
West Downs **N**

**Thames Valley**  
Chiltern Vale  
Thames Forest

**West Midlands**  
J2  
L1

**BCU Family 9 (31)**  
**Avon and Somerset**  
Somerset East  
Somerset West

**Cambridgeshire**  
Cambridgeshire  
Central  
Southern

**Derbyshire**  
Buxton (B Division)

**Devon and Cornwall**  
Devon and Cornwall  
Area 1  
Devon and Cornwall  
Area 3  
Devon and Cornwall  
Area 4

**Dorset**  
Dorset - Eastern  
Dorset - Western

**Essex**  
Braintree

**Gloucestershire**  
Cotswold and Stroud

**Hampshire**  
Andover  
Central Hampshire

**Kent**  
Weald

**Lincolnshire**  
East Lincolnshire  
South Lincolnshire

**Norfolk**  
Norfolk Eastern Area

Norfolk Western  
Area

**North Yorkshire**  
North Yorks –  
Eastern  
North Yorks –  
Western

**Northamptonshire**  
Northamptonshire –  
Western

**Suffolk**  
Suffolk Western

**Thames Valley**  
Aylesbury Vale  
Northern Oxfordshire  
Southern Oxfordshire  
West Berkshire

**West Mercia**  
Hereford **N**  
Shropshire **N**

**Wiltshire**  
Chippenham  
Salisbury

**BCU Family 10 (27)**  
**Avon and Somerset**  
North Bristol  
South Bristol

**Devon and Cornwall**  
Devon and Cornwall  
Area 2

**Hampshire**  
Gosport  
Portsmouth  
Southampton Central

**Kent**  
Thanet

**Lancashire**  
Lancashire Central

**Merseyside**  
Knowsley

**Northamptonshire**  
Northampton

**Northumbria**  
Gateshead West  
Newcastle North  
Tynemouth

**South Wales**  
Cardiff  
Swansea

**South Yorkshire**  
Sheffield North  
Sheffield South

**Staffordshire**  
Stoke on Trent

**Sussex**  
Brighton & Hove

**Thames Valley**  
Milton Keynes  
Oxford

**West Midlands**  
D2  
H1  
J1

**West Yorkshire**  
Chapeltown **N**  
City and Holbeck **N**  
Pudsey and  
Weetwood **N**

**BCU Family 11 (21)**  
**Avon and Somerset**  
South Gloucester

**Bedfordshire**  
Bedford  
Dunstable

**Cheshire**  
Chester and  
Ellesmere port

**Essex**  
Harlow

**Hampshire**  
Basingstoke  
Eastleigh

**Hertfordshire**  
Hertfordshire –  
Eastern  
Hertfordshire Central

**Kent**  
Maidstone  
North Kent  
South-East Kent

**Leicestershire**  
Leicestershire (North  
Area)

**North Yorkshire**  
North Yorks - Central

**Staffordshire**  
Trent Valley

**Suffolk**  
Suffolk Southern

**Surrey**  
North Surrey  
North West Surrey

**Sussex**  
North Downs **N**

**Thames Valley**  
Reading and  
Wokingham

**Warwickshire**  
Warwickshire  
Northern

**BCU Family 12 (8)**  
**Cumbria**  
Carlisle and Penrith

**Dyfed-Powys**  
Carmarthenshire  
Ceredigion  
Pembrokeshire  
Powys

**North Wales**  
North Wales –  
Western

**Northumbria**  
North  
Northumberland  
South-West  
Northumberland

**BCU Family 13 (16)**  
**Cheshire**  
Halton

**GMP**  
Bolton  
Oldham  
Rochdale  
Salford  
Tameside

**Gwent**  
Newport

**Humberside**  
North-East  
Lincolnshire

**Kent**  
Medway

**Lancashire**  
Lancashire Eastern  
Lancashire Pennine

**West Midlands**  
M1  
M2

**West Yorkshire**  
Calderdale  
Dewsbury  
Huddersfield

**BCU Family 14 (3)**  
**(Airports)**

**Essex**  
Stansted Airport

**Metropolitan** **Police**  
Heathrow Airport

**Sussex**  
Gatwick Airport

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